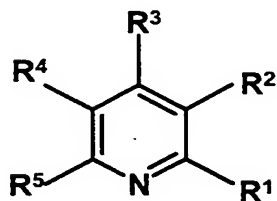
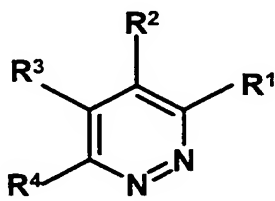


We claim:

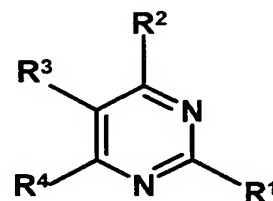
- 1) A process for preparing aminodihalophosphines, diaminohalophosphines, triaminophosphines, phosphorous ester diamides, aminophosphines, diaminophosphines, phosphorous ester amide halides and aminophosphine halides with elimination of an acid in the presence of an auxiliary base, wherein
- b) the auxiliary base and the acid form a salt which is liquid at temperatures at which the desired product is not significantly decomposed during the process of separating off the liquid salt and
- c) the salt of the auxiliary base forms two immiscible liquid phases with the desired product or the solution of the desired product in a suitable solvent.
- 2) A process as claimed in claim 1, wherein the salt of the auxiliary base has a melting point below 160°C.
- 3) A process as claimed in any of the preceding claims, wherein the salt of the auxiliary base has an  $E_T(30)$  of more than 35.
- 4) A process as claimed in any of the preceding claims, wherein the base contains at least one nitrogen atom.
- 5) A process as claimed in any of the preceding claims, wherein the base used is selected from among compounds of the formulae (Ia) to (Ir),



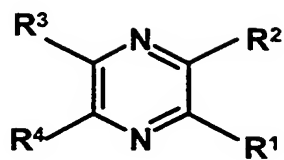
(a)



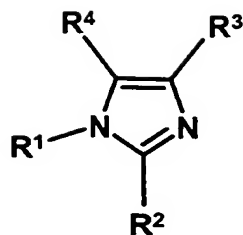
(b)



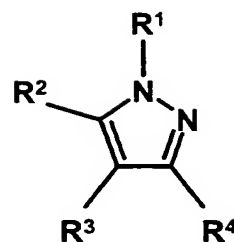
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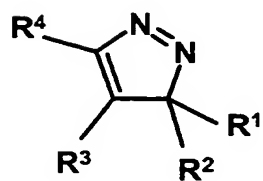
(d)



(e)



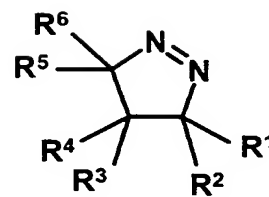
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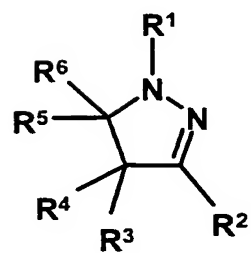
(g)



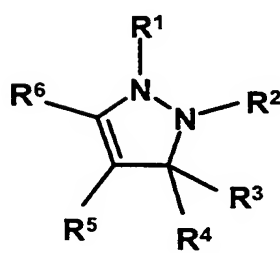
(h)



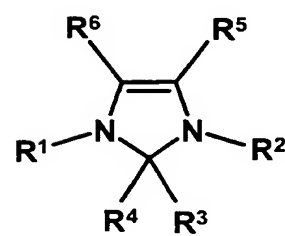
(i)



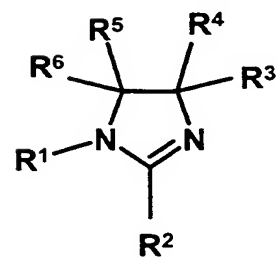
(j)



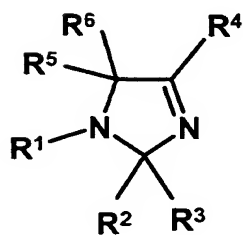
(k)



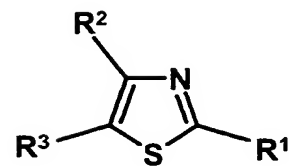
(l)



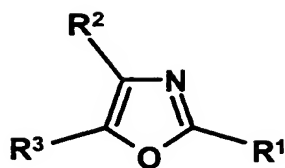
(m)



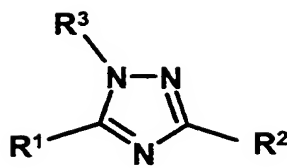
(n)



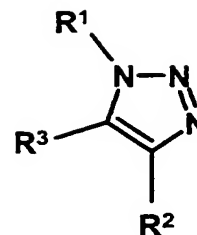
(o)



(p)



(q)

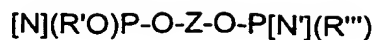


(r)

where

5  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  are each, independently of one another, hydrogen,  $C_1$ - $C_{18}$ -alkyl,  $C_2$ - $C_{18}$ -alkyl which may be interrupted by one or more oxygen and/or sulfur atoms and/or one or more substituted or unsubstituted imino groups,  $C_6$ - $C_{12}$ -aryl,  $C_5$ - $C_{12}$ -cycloalkyl or a five- to six-membered, oxygen-, nitro-  
10 gen- and/or sulfur-containing heterocycle, where each of the abovementioned radicals may be substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles.

- 6) A process as claimed in any of the preceding claims, wherein the auxiliary base is 1-n-butylimidazole, 1-methylimidazole, 2-methylpyridine or 2-ethylpyridine.
- 15 7) A process as claimed in any of claims 1 to 4, wherein the auxiliary base is di-n-butyl-n-pentylamine or 1,5-diazabicyclo[4.3.0]non-5-ene (DBN).
- 8) A process as claimed in any of the preceding claims, wherein the salt of the auxiliary base is soluble to an extent of less than 20% by weight in the desired  
20 product or in the solution of the desired product in a suitable solvent.
- 9) A process as claimed in any of the preceding claims, wherein  
25 diphosphorous diester amides ( $[N](R'O)P-O-Z-O-P[N'](OR'')$ ),  
diphosphorous ester diamides ( $[N][N']P-O-Z-O-P[N'']([N'''])$ ),  
bistriaminophosphines ( $[N][N']P-[N'']-Z-[N''']-P[N''''([N'''''])]$ ),  
or systems of the formula  
 $[N](R'O)P-O-Z-O-P(OR'')(OR''')$ ,  
 $[N][N']P-O-Z-O-P(OR'')(OR''')$  or  
 $[N][N']P-O-Z-O-P[N'']([N'''])$   
30 or systems which are both nitrogen- and carbon-substituted on each phosphorus and have the formula  
 $[N](R')P-O-Z-O-P[N'](R''')$  or  
 $[N](R')P-[N'']-Z-[N''']-P[N''](R''')$   
or systems of the formula



are prepared,

where R, R', R'' and R''' can be any organic radicals which may be identical or different, [N], [N'], [N''], [N'''], [N'''] and [N'''] are unsubstituted, monosubstituted or disubstituted amino groups which may be identical or different and Z can be any divalent bridge.

- 10) A process for preparing phosphorus compounds from the appropriate starting materials as set forth in any of the preceding claims, wherein the preparation is carried out continuously at from 30°C to 190°C and a residence time of from 1 second to 1 hour.
- 11) The use of a
  - diphosphorous diester amide ( $[N](R'O)P-O-Z-O-P[N'](OR'')$ ),
  - diphosphorous ester diamide ( $[N][N']P-O-Z-O-P[N'']([N'''])$ ),
  - bistriaminophosphine ( $[N][N']P-[N'']-Z-[N''']-P[N''''([N'''''])]$ ),
  - or a system of the formula
  - $[N](R'O)P-O-Z-O-P(OR'')(OR''')$ ,
  - $[N][N']P-O-Z-O-P(OR'')(OR''')$  or
  - $[N][N']P-O-Z-O-P[N'']([N'''])$
  - or a system which is both nitrogen- and carbon-substituted on each phosphorus and has the formula
  - $[N](R')P-O-Z-O-P[N''](R''')$  or
  - $[N](R')P-[N'']-Z-[N''']-P[N''](R''')$
  - or a system of the formula
  - $[N](R'O)P-O-Z-O-P[N''](R''')$
  - where R, R', R'' and R''' can be any organic radicals which may be identical or different, [N], [N'], [N''], [N'''], [N'''] and [N'''] are unsubstituted, monosubstituted or disubstituted amino groups which may be identical or different and Z can be any divalent bridge,
  - obtainable by a process as claimed in claim 9 or 10 as ligand for catalysts.
- 12) The use of a ligand as set forth in claim 11 as ligand for cobalt-, rhodium-, ruthenium-, palladium-, platinum-, osmium-, iridium- or nickel-containing catalysts.
- 13) The use of a catalyst as set forth in claim 12 in a hydrocyanation, hydrogenation or hydroformylation.

- 14) A process for separating acids from reaction mixtures by means of an auxiliary base, wherein
- 5           b)    the auxiliary base and the acid form a salt which is liquid at temperatures at which the desired product is not significantly decomposed during the process of separating off the liquid salt and
- 10           c)    the salt of the auxiliary base forms two immiscible liquid phases with the desired product or the solution of the desired product in a suitable solvent, and the desired product is firstly distilled off from the reaction mixture in the presence of the auxiliary base in the protonated form and the auxiliary base is then set free by means of a strong base and the free auxiliary base is subsequently distilled.
- 15   15) A process for separating acids from reaction mixtures by means of an auxiliary base, wherein
- 20           b)    the auxiliary base and the acid form a salt which is liquid at temperatures at which the desired product is not significantly decomposed during the process of separating off the liquid salt and
- 25           c)    the salt of the auxiliary base forms two immiscible liquid phases with the desired product or the solution of the desired product in a suitable solvent, and the auxiliary base is firstly set free by means of a strong base and the free auxiliary base is subsequently distilled in the presence of the desired product and the desired product is then distilled.
- 30   16) A method of stopping acid-catalyzed reactions, which comprises neutralizing the acid catalyst in a chemical reaction with an auxiliary base, wherein
- 35           b)    the auxiliary base and the acid form a salt which is liquid at temperatures at which the desired product is not significantly decomposed during the process of separating off the liquid salt and
- c)    the salt of the auxiliary base forms two immiscible liquid phases with the desired product or the solution of the desired product in a suitable solvent.